composition, make a hole in the middle of it, and put therein three quarters of a pint of the mixture of allum and size, to which add three or four pounds of coarse plaster of Paris;* the whole is to be well beaten, and mixed together rather stiff; put this mixture into the wooden moulds of your intended chimney-piece; the sides, ends, and tops of which moulds are, made of moveable pieces, previously oiled with the following mixture.

Take one pint of the droppings of sweet oil, which costs about 1s. the pint, and add thereto one pint of clear lime-water, made from pouring boiling-water on lumps of chalk-lime, in a close vessel, till fully saturated; when the lime water becomes clear, it is proper to be added to the oil as above-mentioned, and on their being stirred together they will form a thick oily mixture, or emulsion, proper to apply upon the moulds.

In forming the side or jamb of a chimney-piece, the mould is to be first half filled with the sand lime and plaster composition, then two wires wrapped round with a thin layer of hemp, and which wires are nearly the length of the piece to be moulded, are to be placed in parallel lines, lengthwise, in the mixture or composition in the mould, and afterwards the mould is filled up with more of the composition, and if there is any superfluous quantity, it is to be struck off with a piece of flat board.

The lid or top part of the mould is to be then placed upon it, and the whole subjected to a strong pressure from weighted levers, or a screw press. The composition is to remain under this pressure for twenty or thirty minutes; the precise time necessary may be known, from examining a small specimen of the composition reserved purposely to determine the time it requires to harden and set firm.

The sides of the mould are to be held together by iron clamps and wedges.

The wires above-mentioned answer a double purpose, by giving strength to the jambs, and retaining the whole mass together, in case it should at any time be cracked by accident.

The chimney-pieces may be made either plain or fluted, according to the mould; and when moulded, they are finished off by rubbing them over with allum water, and smoothing them with a trowel and a little wet plaster of Paris.

A common plain chimney-piece of this composition is sold at only seven shillings, and a reeded one at twenty-eight shillings, completely fitted up.

* Gypsum, or alabaster, an article found in abundance in the neighbourhood of Belfast. B.M.M.

On the Decolouration of Vinegar, and a new process for depriving this Acid, and other Vegetable Liquids, of their colour, by means of Animal Charcoal; by M. Figuier.

[From the Annales de Chimie.]

Of all the vegetable acids, that which bears the name of vinegar, is without dispute the most anciently known, and the most useful; the facility with which it is prepared, and the means we have of procuring it in large quantities, at a very moderate price, in almost every country, are causes that have multiplied its use both in domestic economy, and in the arts. It is one of the principal constituents of a great number of chemical and pharmaceutical preparations.

The physician employs it usefully in many disorders; and the perfumer, distiller, and confectioner, each find it necessary in several of their operations.

The sale of this article forms a considerable branch of commerce in France, and to improve the mode of obtaining it, to purify it, and to extend its use, has excited the ingenuity of a number of chemists and other persons.

Being occupied with a series of experiments, in which my object was to deprive of colour some vegetable liquors, by means of charcoal, I have been led to furnish the society with a method of depriving this acid of colour, which, if I do not deceive myself, will greatly contribute to give it a higher price, and to improve its properties.

We know, that vinegar made from wine is preferable to that obtained by fermentation from other vegetable substances. It is of this first that I now speak. In commerce, two kinds of vinegar are known, the red and the white. The first proceeds from the acidification of red wine, the second from that of white wine; the last is most esteemed, because it contains less of extractive colouring-matter than the red, for which reason we endeavour to take from the latter a portion of this colouring matter, in order to bring it nearer in quality to the white; which we also deprive

of its colour, as it is in fact of a yellowish red.

The methods practised to render vinegar less highly coloured than in its natural state, are as follows:

1st. The whites of one or two eggs are mixed with a litre of vinegar, the mixture is heated to ebullition, and the albumen, in coagulating, seizes a part of the colouring matter; the liquor when cooled is filtered through paper, and the vinegar is obtained with much less colour than it had before the operation.

2d. By pouring a glass of milk into five or six litres of heated vinegar, and agitating the mixture, the caseous part of the milk, in becoming concrete, precipitates rather a considerable quantity of the colouring principle of the acid. In this operation it is likewise filtered.

3d. The *marc* of white grapes having also the property of decolouring vinegar, it is used for this purpose in large establishments. The *marc* is put into large vats that are filled with vinegar, and then left for some days, when the liquor is drawn out by an opening made in the lower part of the vats. This vinegar which has begun to lose its colour, is carried to another vat containing fresh *marc*, in which it loses still more of its colour, and by similar operations, more or less multiplied, it is almost entirely deprived of it.

The new process which I am going to describe, is perferable to these; its execution is easy and economical; it may be practised both in the small and large way with the same facility; and vinegar is produced by it as colourless as the purest water, which has never hitherto been accomplished.

In the course of my experiments for destroying the colour of vegetable liquids by means of charcoal, I have discovered that animal charcoal possesses the property of decolouring several of them in a greater degree than the vegetable charcoal. I shall not relate the numerous experiments I have made to this end; I shall only describe the process that must be followed, in order to effect the entire decolouration of the liquids that have occupied my attention: thus, in order to take away the colour of vinegar, a litre of the red sort, cold, is mixed in a glass vessel with forty-five grammes of bone charcoal, obtained in the manner hereafter described; this mixture is shaken from time to time, and at the end of twenty-four hours it is perceptible that the vinegar begins to whiten; in two or three days its colour is entirely gone, and when filtered through paper, it passes perfectly transparent, and as colourless as water, without losing any of its taste, smell, or acidity. When the decolouration is to be effected in the large way, the animal charcoal is thrown into a cask containing vinegar, and care is taken to stir the vinegar in order to renew the points of contact; it is not necessary to employ so great a quantity in proportion for the large way as for the small; one half is sufficient; the colour in such case disappears less instantaneously, but the operation is equally certain, and whatever length of time the vinegar is left in contact with the charcoal, it never contracts any smell or taste that is foreign to it. I have kept similar mixtures by me for several months, and the acid has not suffered the least alteration. If the vinegar is intended to retain a little of the colour, the proportion of charcoal may be reduced.

The vinegar thus decoloured may be made aromatic, by infusing plants into it before the operation, or by mixing with it afterwards a small quantity of alcohol, charged with the aromatic principle; it is then preferable for the table and the toilet to any vinegar known at present, and also for pharmaceutical preparations, and for pickling green fruits. I have pickled several myself with this acid, especially girkins, (*cucumis sativus*,) according to the directions given in the Abbé Royier's Complete Course of Agriculture: these fruits retained the colour that they had when they were first gathered.

The charcoal is prepared in the following manner: I take the most compact part of ox and sheep-bones and fill a crucible with them; I carefully lute the cover, leaving only a small opening at the top; the crucible thus prepared, I place in a forge furnace, and heat it gradually until it is red; when the flame that is produced by the combustion of the oily and gelatinous parts of the bones has ceased, I diminish the opening in the lid, and suddenly increase the fire; it then evolves carburetted hydrogen gas and oxycarburet; when it is cool, I unlute the crucible, and reduce the charcoal on porphyry to a very fine powder. I have observed, that the decolouring action of animal charcoal thus obtained, is powerful in proportion to the care that is taken in its preparation, and in its pulverisation.

Ivory black, as well as bone black, has the property of destroying the colour of

vinegar, wine, and the residuum of ether; both lose this property after being employed for this purpose; but it may be revived in them, by heating them strongly in a closed vessel; it is true, that the decolouring action is less powerful, but it is still strong enough to effect the decolouration completely, when the mixture is left in contact for several days or more.

All the experiments here related have been repeated with wood charcoal, previously washed, calcined, and carefully pulverised. The decolouration of the above-mentioned liquids by this charcoal was almost insensible; whence it results that animal charcoal possesses the decolouring property in an infinitely greater degree than the vegetable charcoal, an important fact which has not hitherto been observed, and which may be employed in numerous and useful applications to the chemical arts.

Vinegar rendered colourless by the method described in this memoir, contains a little acetate and phosphate of lime. These earthy salts are also contained in the coloured vinegar, although in less quantity; but we must not infer from this circumstance, that colourless vinegar will produce ill effects on the animal economy; for the phosphate of lime has certainly no such effects, since it is contained in a much greater quantity in the substances that serve to nourish us, such as muscular flesh, grain, and in general in all our food. Nevertheless, in order to dissipate any fears that may be entertained on this head, the carbonated bone, may be deprived of these salts, if deemed necessary, before it is applied to the vinegar, in the following manner.

Upon some ivory black, I pour an equal weight of muriatic acid at seventeen degrees of the areometer of Beaumé; after twelve hours I add some water to the mixture; and throw it upon a filter that has been previously heated; I washed the charcoal with pure water, and dried it in the air; by this operation it lost 45 hundredths of its weight, but not any of its colouring property; on the contrary, this property was increased; for twenty-four grammes have sufficed to take away the colour of a litre of red vinegar. Tincture of turnsol becomes instanteously colourless on being mixed with a few grammes of this matter.

This decolouring property is not peculiar to the animal charcoal obtained from bones; it is also possessed by that which is made from the other parts of animals, by calcination in closed vessels. The concrete gelatine (glue) completely succeeds; which proves that phosphorus and carbonate of lime have no effect in the decolouration.

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